National Weather Service Product Description Document (PDD)

Experimental Surf Forecast Matrix
NOAA/NWS Eastern Region Weather Forecast Office Wilmington, NC
May 2021

Part I – Mission Connection

a. Product Description:

Rip currents are the number one weather-related cause of fatalities in the coastal Carolinas. In recent years, there has been tremendous effort by the NWS in recent years to increase awareness and provide vital forecast information to help mitigate this hazard. The objective of the Experimental Surf Forecast Matrix is to provide greater spatial and temporal resolution to the Surf Zone Forecast (SRF) currently issued by coastal and Great Lakes National Weather Service (NWS) offices.

The SRF currently contains a full two-day forecast, with only one forecast value provided for each day per coastal county. That forecast is based on the maximum threat/value expected during the day. However, the current SRF does not describe the timing or expected duration of the threat. With recent improvements in wave modeling and rip current forecasting, including the Nearshore Wave Prediction System (NWPS) probabilistic rip current model, there is increased ability to add detail to the current SRF forecast method. The Experimental Surf Forecast Matrix will provide a 6-day forecast and include similar forecast parameters as the operational SRF product, with an individual matrix for popular beaches in the Wilmington, NC County Warning Area to increase the spatial resolution of our beach forecast.

b. Purpose and Intended Use:

The Experimental Surf Forecast Matrix is designed to supplement the official SRF forecast product by providing additional details to our partners and the public. The matrix will provide lifeguard/beach services and emergency managers with important information on the timing and location of hazardous surf conditions to enhance public safety decision making processes. The product is intended for planning purposes and should not be substituted for the official SRF.

c. Audience:

The Experimental Surf Forecast Matrix is targeted towards a wide range of users, from the general public to beach community officials and NWS core partners.

d. Presentation Format:

The Experimental Surf Forecast Matrix will be available in text format, accessible from www.weather.gov/ilm/surfmatrices. The top of the webpage includes a statement emphasizing

this product is *experimental* and for *planning* purposes only, and to refer to the official SRF product for the current beach forecast. The webpage will also include information on how to interpret NWPS rip current probabilities. The product will be issued in tandem with the primary SRF product issuance times, consistent with local policies. An example of the Experimental Surf Forecast Matrix can be seen in Part II Section A below.

e. Feedback Method:
Feedback will be solicited via an online survey (https://www.surveymonkey.com/r/S7RLC23), with information for providing feedback included at the top of the product webpage. For additional comments or questions, please contact the following NWS Wilmington, NC personnel:

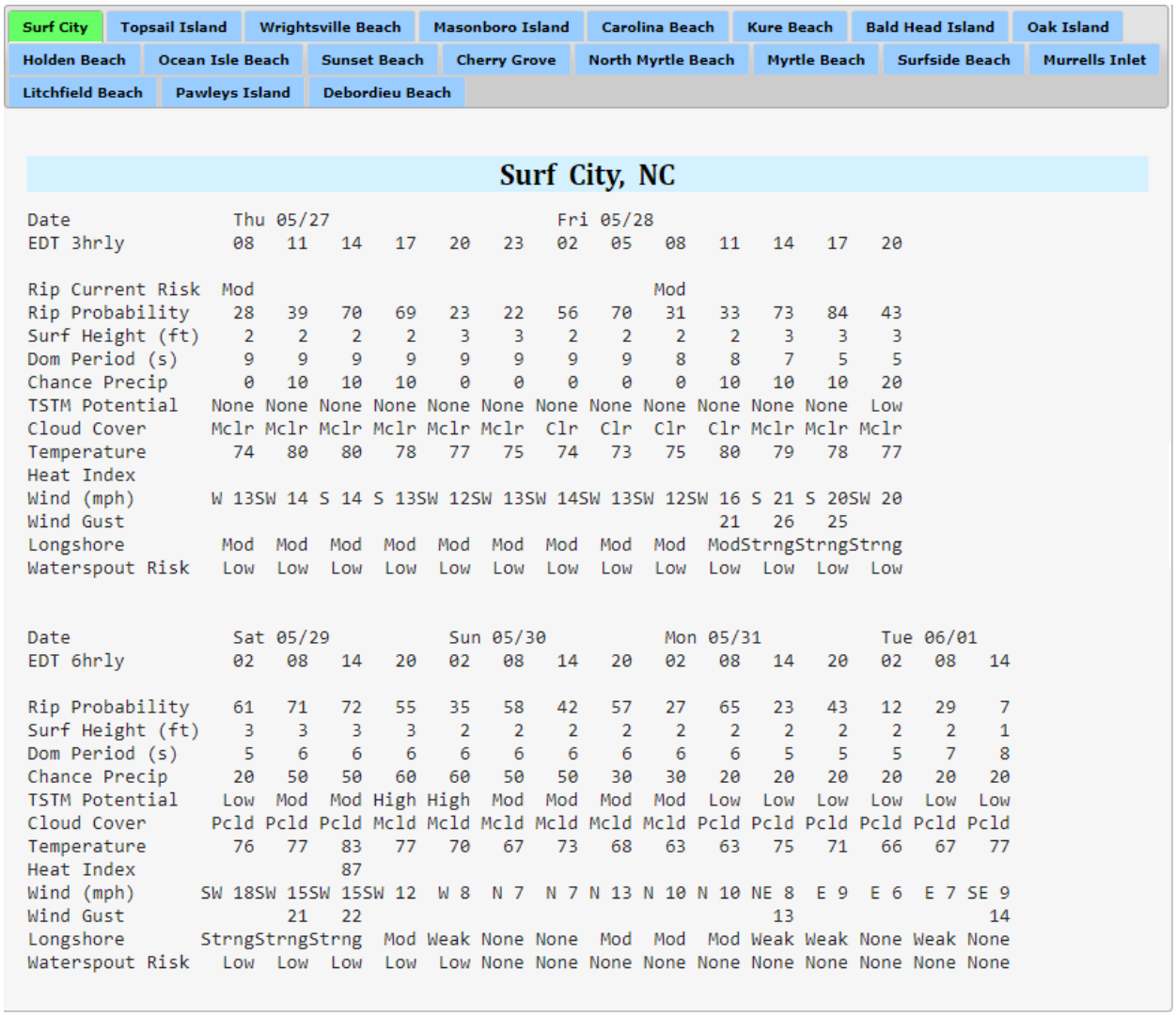
Victoria Oliva - Surf Program Leader - Victoria.oliva@noaa.gov
Matt Scalora - GFE Focal Point - Matthew.scalora@noaa.gov
Steve Pfaff - Warning Coordination Meteorologist - Steven.pfaff@noaa.gov

NWS Wilmington, NC
2015 Gardner Drive
Wilmington, NC 28405
910-762-4289

Part II – Technical

a. Format and Science Basis:
The Experimental Surf Forecast Matrix is currently modeled after similar NWS matrix text products, including the Point Forecast Matrix (PFM) and Fire Weather Point Forecast Matrix (PFW). The new experimental matrix will be structured into 3 hourly increments to best represent trends during the initial forecast period, then 6 hourly segments for the extended outlook. The matrix will include the official Rip Risk forecasted in the SRF product, as well as Rip Probability values from the NWPS model to highlight variations and timing of the rip risk for the entire forecast period. The other variables within the matrix will be taken from forecast grids already being produced at the local level at Weather Forecast Office Wilmington, NC.

Below is an example of the Experimental Surf Forecast Matrix:



Surf City | Topsail Island | Wrightsville Beach | Masonboro Island | Carolina Beach | Kure Beach | Bald Head Island | Oak Island
Holden Beach | Ocean Isle Beach | Sunset Beach | Cherry Grove | North Myrtle Beach | Myrtle Beach | Surfside Beach | Murrells Inlet
Litchfield Beach | Pawleys Island | Debordieu Beach

Surf City, NC

Date	Thu 05/27						Fri 05/28					
EDT 3hrly	08	11	14	17	20	23	02	05	08	11	14	17	20
Rip Current Risk	Mod								Mod				
Rip Probability	28	39	70	69	23	22	56	70	31	33	73	84	43
Surf Height (ft)	2	2	2	2	3	3	2	2	2	2	3	3	3
Dom Period (s)	9	9	9	9	9	9	9	9	8	8	7	5	5
Chance Precip	0	10	10	10	0	0	0	0	0	10	10	10	20
TSTM Potential	None	None	None	None	None	None	None	None	None	None	None	None	Low
Cloud Cover	Mclr	Mclr	Mclr	Mclr	Mclr	Mclr	Clr	Clr	Clr	Clr	Mclr	Mclr	Mclr
Temperature	74	80	80	78	77	75	74	73	75	80	79	78	77
Heat Index													
Wind (mph)	W 13	SW 14	S 14	S 13	SW 12	SW 13	SW 14	SW 13	SW 12	SW 16	S 21	S 20	SW 20
Wind Gust										21	26	25	
Longshore	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Strng	Strng	Strng
Waterspout Risk	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low

Date	Sat 05/29				Sun 05/30				Mon 05/31				Tue 06/01		
EDT 6hrly	02	08	14	20	02	08	14	20	02	08	14	20	02	08	14
Rip Probability	61	71	72	55	35	58	42	57	27	65	23	43	12	29	7
Surf Height (ft)	3	3	3	3	2	2	2	2	2	2	2	2	2	2	1
Dom Period (s)	5	6	6	6	6	6	6	6	6	6	5	5	5	7	8
Chance Precip	20	50	50	60	60	50	50	30	30	20	20	20	20	20	20
TSTM Potential	Low	Mod	Mod	High	High	Mod	Mod	Mod	Mod	Low	Low	Low	Low	Low	Low
Cloud Cover	Pcld	Pcld	Pcld	Mcld	Mcld	Mcld	Mcld	Mcld	Mcld	Pcld	Pcld	Pcld	Pcld	Pcld	Pcld
Temperature	76	77	83	77	70	67	73	68	63	63	75	71	66	67	77
Heat Index			87												
Wind (mph)	SW 18	SW 15	SW 15	SW 12	W 8	N 7	N 7	N 13	N 10	N 10	NE 8	E 9	E 6	E 7	SE 9
Wind Gust		21	22								13				14
Longshore	Strng	Strng	Strng	Mod	Weak	None	None	Mod	Mod	Mod	Weak	Weak	None	Weak	None
Waterspout Risk	Low	Low	Low	Low	Low	None	None	None	None	None	None	None	None	None	None

b. Product Availability:

The Experimental Surf Forecast Matrix will be available at www.weather.gov/ilm/surfmatrices. The matrix will be issued/updated at the same time as the official local SRF product, with times based on local policies.

c. Additional Information: N/A